CLAIMS

What is claimed is:

1. A system for optimizing cooling air supply pressure comprising:

a high pressure fluid source;

means for supplying fluid to a point of use at a pressure sufficient to maintain a required cooling airflow and backflow margin at the point of use; and

said fluid supplying means further comprising means for reducing leakage of said fluid between said high pressure source and said point of use.

2. A system according to claim 1, wherein said means for reducing leakage comprises at least one nozzle communicating with said high pressure fluid source and at least one ejector sized to deliver said fluid to said point of use at said pressure sufficient to maintain said required cooling airflow and backflow margin.

3. A system according to claim 2, further comprising a plurality of ejectors and a plurality of nozzles with each of said nozzles being aligned with one of said ejectors.

4. A system according to claim 2, further comprising a cavity between said high pressure fluid source and said point of use, said cavity containing said fluid at a pressure lower than said pressure in said high pressure fluid source, and said fluid in said cavity being drawn into an inlet of said at least one ejector, thereby reducing said leakage between said high pressure fluid source and said point of use.

5. A system according to claim 1, wherein said point of use comprises a plenum and a blade outer air seal assembly.

6. A system according to claim 5, wherein said blade outer air seal assembly has a plurality of holes which receive air from said plenum and deliver said air to a surface of an air seal adjacent a turbine blade.

7. A system according to claim 1, wherein said high pressure fluid source comprises a chamber which receives bleed air from a high pressure compressor at the pressure at an exit of said high pressure compressor.

8. A gas turbine engine comprising:

a turbine blade;

a blade outer air seal adjacent said turbine blade;

a chamber containing air bled from a high pressure compressor; and

a nozzle and ejector assembly for delivering air from said chamber at a pressure sufficient to maintain a cooling air flow through said blade outer seal and a back flow margin across said blade outer seal.

9. A gas turbine engine according to claim 8, wherein said nozzle and ejector assembly delivers cooling air at said sufficient pressure to a plenum which communicates with an outer surface of said blade outer seal.

10. A gas turbine engine according to claim 9, wherein said blade outer seal has a plurality of holes through which cooling air from said plenum flows onto an inner surface of said blade outer seal and a tip of said turbine blade.

11. A gas turbine engine according to claim 9, wherein said nozzle and ejector assembly reduces leakage of cooling fluid between said chamber and said plenum.